New Zealand Plant Protection Society

Protecting Plants with Science

75th Anniversary

ANNUAL CONFERENCE PROGRAMME AND ABSTRACTS

2022

9–11 August

Christchurch Town Hall

New Zealand

Full and daily registrations

Student rates available

See **www.nzpps.org** for further details and registration information

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NZPPS CONFERENCE 2022

Tuesday 9 August 2022

8.00-8.45 am **Registration**

8.45-8.55 am **Mihi Whakatau**

8.55-9.00 am **Conference Opening: Mike Cripps, President**

9.00-9.30 am **Opening Address: Professor Dame Juliet Gerrard**

9.30-10.30 am	**SESSION 1: Symposium Special Session**
Chair:	Rebecca Campbell, Plant & Food Research

10.30-11.00 am **Morning Tea**

11.00 am-12.30 pm	**SESSION 2: Pests 1**
Chair:	Adriana Najar-Rodriguez, Plant & Food Research

12.30-1.30 pm **Lunch**

1.30-2.30 pm	**SESSION 3: Weeds 1**
Chair:	Trevor James, AgResearch

2.30-3.30 pm	**SESSION 4: Horticultural Pathogens 1**
Chair:	Seona Casonato, Lincoln University

3.30-3.45 pm **Afternoon Tea**

3.45-4.30 pm	**SESSION 5: Forest Pathogens**
Chair:	Nick Waipara, Plant & Food Research

4.30-5.30 pm	**SESSION 6: Biosecurity 1**
Chair:	Karyn Froud, Biosecurity Research Ltd

5.30-6.30 pm Posters/Drinks & Nibbles

Wednesday 10 August 2022

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Chair:	Eirian Jones, Lincoln University

3.30-3.35 pm **Drinks Break**

3.35-5.00 pm **Annual General Meeting**

7.00 pm **Conference Dinner**

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3.00-4.15 pm	**SESSION 15: Horticultural Pathogens 2**
Chair:	Virginia Marroni, Plant & Food Research

4.15-4.30 pm	**Emerging Speaker Award / Conference Closing**

SESSION 7: BIOCONTROL

A long and winding road – the process of importing a rust fungus *Uromyces pencanus* as a biocontrol agent of Chilean needle grass (*Nassella neesiana*) in New Zealand

Alana Den Breeyen[1], Freda Anderson[2], Jane Barton[3] and Chantal Probst[1]

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Chilean needle grass [CNG] (*Nassella neesiana*) is mostly a pasture weed in New Zealand where it outcompetes and displaces pasture species and can cause major damage to stock. Native to Agentina, CNG is widespread in Hawke's Bay and Marlborough, with smaller sites in northern Canterbury and Auckland. A rust fungus, *Uromyces pencanus*, was identified as the most suitable biocontrol candidate against CNG, with strain UP27 shown to be highly host specific after extensive research undertaken in Argentina. In 2011, the New Zealand Environmental Protection Authority (EPA) granted permission to import *Uromyces pencanus*. In 2017, additional host range testing, undertaken for Australia, resulted in the unexpected production of *U. pencanus* spores on two non-target *Austrostipa* species from Australia. Ten years on, permission to export the rust fungus from Argentina was finally approved during the Covid-19 pandemic, giving a three-month export permit. The journey from finding a suitable biological control agent for CNG to getting a culture into New Zealand and the future outlook of this project are discussed.

Combining entomopathogens for more efficient management of fall armyworm in maize

Juliana Andrea Gomez[1], Paola Emilia Cuartas[2], Carlos Espinel[1], Gloria Patricia Barrera[1] and Laura Fernanda Villamizar[3]

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The fall armyworm *Spodoptera frugiperda* is a polyphagous pest able to cause important agricultural losses. The pest has rapidly spread worldwide, being recently detected in parts of New Zealand in March and April 2022. Among the natural enemies of *S. frugiperda*, pathogens such as bacteria, fungi and viruses represent an environmental alternative to chemical insecticides. In this work, we studied the potential of combining one virus from the Baculoviridae family (Nucleoplyhedrovirus, NPV) and one strain of the fungus *Metarhizium rileyi* to control *S. frugiperda* under laboratory, greenhouse, and field conditions. The combined use of NPV and *M. rileyi* applied simultaneously showed an additive effect in laboratory, causing higher larval mortality than the biocontrol agents used separately. Some dead larvae showed mixed infection, with swollen bodies (viral infection sign), accompanied by fungus hyphae emerging from the cadavers. Under greenhouse conditions, the mixture of both entomopathogens (50:50) caused 63.3% mortality and significantly reduced insect damage plants. Finally, under field conditions, the individual or sequential application of NPV and *M. rileyi* using 100% of their recommended doses, and the simultaneous application of both entomopathogens at 50% of their recommended doses, significantly reduced the recent foliar damage to levels under the threshold for economic losses (30% fresh damage), while the damage reached 43% when control measures were not used. Results allowed to conclude that the combined application of NPV and *M. rileyi* (two biocontrol agents with different modes of action) is a promising strategy to develop sustainable integrated management programmes to control fall armyworm.